

Qingdao Richmat Intelligence Technology Inc

RF TEST REPORT

Report Type:

FCC Part 15.249 & ISED RSS-210 RF report

Model:

HJBLE

REPORT NUMBER:

210100809SHA-001

ISSUE DATE:

March 03, 2021

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Manufacturer: Qingdao Richmat Intelligence Technology Inc
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Qingdao, Shandong 266000, China

FCC ID: 2AJJGHJBLE

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

47CFR Part 15 (2019): Radio Frequency Devices (Subpart C)

ANSI C63.10 (2013): American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

RSS-210 Issue 9 (August 2016): Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

RSS-Gen Issue 5 (March 2019) Amendment 1: General Requirements for Compliance of Radio Apparatus

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TEST REPORT

Content

REVISION HISTORY	4
MEASUREMENT RESULT SUMMARY	5
1 GENERAL INFORMATION	6
1.1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)	6
1.2 TECHNICAL SPECIFICATION	6
1.3 DESCRIPTION OF TEST FACILITY	7
2 TEST SPECIFICATIONS	8
2.1 STANDARDS OR SPECIFICATION	8
2.2 MODE OF OPERATION DURING THE TEST.....	8
2.3 TEST SOFTWARE LIST	9
2.4 TEST PERIPHERALS LIST	9
2.5 TEST ENVIRONMENT CONDITION:.....	9
2.6 INSTRUMENT LIST	10
2.7 MEASUREMENT UNCERTAINTY	11
3 RADIATED EMISSION	12
3.1 LIMIT	12
3.2 MEASUREMENT PROCEDURE	12
3.3 TEST CONFIGURATION	14
3.4 TEST RESULTS OF RADIATED EMISSIONS	16
4 POWER LINE CONDUCTED EMISSION	36
4.1 LIMIT	36
4.2 TEST CONFIGURATION	36
4.3 MEASUREMENT PROCEDURE	37
4.4 TEST RESULTS OF POWER LINE CONDUCTED EMISSION.....	38

Revision History

Report No.	Version	Description	Issued Date
210100809SHA-001	Rev. 01	Initial issue of report	March 03, 2021

Measurement result summary

TEST ITEM	FCC REFERANCE	IC REFERANCE	RESULT
Radiated emission	15.249 & 15.209	RSS-210 Issue 9 Clause B.10	Pass
Power line conducted emission	15.207	RSS-Gen Issue 5 Clause 8.8	Pass

Notes: 1: NA =Not Applicable

2: Determination of the test conclusion is based on IEC Guide 115 in consideration of measurement uncertainty.

3: Additions, Deviations and Exclusions from Standards: None.

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1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Bluetooth Module
Type/Model:	HJBLE
Description of EUT:	The report is C2PC report, the following host models were added and tested.
Host models:	HJC25, HJC26, HJC27, HJH37 Ble, HJH103 Ble
Rating:	DC 3.3V
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Software Version:	/
Hardware Version:	/
Sample received date:	January 20, 2021
Date of test:	January 20, 2021 ~ February 22, 2021

1.2 Technical Specification

Frequency Range:	2402MHz - 2480MHz
Support Standards:	Bluetooth LE
Type of Modulation:	GFSK
Channel Number:	40
Data Rate:	1Mbps
Channel Separation:	2 MHz
Antenna Information:	PCB antenna, 3dBi Peak gain

1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road (North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN1175
	IC Registration Lab CAB identifier.: CN0051
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

2 TEST SPECIFICATIONS

2.1 Standards or specification

47CFR Part 15 (2019)
 ANSI C63.10 (2013)
 RSS-210 Issue 9 (August 2016)
 RSS-Gen Issue 5 (March 2019) Amendment 1

2.2 Mode of operation during the test

The models of host of HJC25, HJC26 and HJC27 were observed while the test receiver worked as “max hold” continuously and the highest reading among the whole test procedure was recorded.

The lowest, middle and highest channel were tested as representatives.

Frequency Band (MHz)				2402 ~ 2480			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

The test setting software is offered by the manufactory. The pre-scan for the conducted power with all rates in each modulation and bands was used, and the worst case was found and used in all test cases.

Test software and Power Setting parameter			
Test Software	/		
Working Mode	BLE		
Test Channel	2402MHz	2440MHz	2480MHz
Power Setting	7	7	7

While testing transmitting mode of EUT, the internal modulation and continuously transmission was applied.

- 1) Radiated test mode: EUT transmitted signal with BT antenna;
- 2) Conducted test mode: EUT transmitted signal from BT RF port connected to SPA directly;

2.3 Test software list

Test Items	Software	Manufacturer	Version
Conducted emission	e3	Audix	9.160323
Radiated emission	e3	Audix	9.160323

2.4 Test peripherals list

Item No.	Name	Band and Model	Description
-	-	-	-

2.5 Test environment condition:

Test items	Temperature	Humidity
Radiated emission	25.2°C	50% RH
Assigned bandwidth (20dB bandwidth)	25.2°C	50% RH
Power line conducted emission	21.7°C	42% RH

2.6 Instrument list

Conducted Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Test Receiver	R&S	ESCS 30	EC 2107	2021-07-14
<input checked="" type="checkbox"/>	A.M.N.	R&S	ESH2-Z5	EC 3119	2021-11-10
Radiated Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Test Receiver	R&S	ESIB 26	EC 3045	2021-09-16
<input checked="" type="checkbox"/>	Bilog Antenna	TESEQ	CBL 6112D	EC 4206	2021-09-25
<input checked="" type="checkbox"/>	Horn antenna	R&S	HF 906	EC 3049	2022-01-17
<input checked="" type="checkbox"/>	Horn antenna	ETS	3117	EC 4792-1	2021-03-15
<input checked="" type="checkbox"/>	Horn antenna	TOYO	HAP18-26W	EC 4792-3	2021-07-09
<input checked="" type="checkbox"/>	Pre-amplifier	R&S	Pre-amp 18	EC5262	2021-06-11
<input checked="" type="checkbox"/>	Semi-anechoic chamber	Albatross project	-	EC 3048	2021-07-14
Additional instrument					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Therom-Hygrograph	ZJ1-2A	S.M.I.F.	EC 3783	2021-03-03
<input checked="" type="checkbox"/>	Pressure meter	YM3	Shanghai Mengde	EC 4620	2021-09-09

2.7 Measurement uncertainty

The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test item	Measurement uncertainty
Conducted emission 9KHz-150KHz	±3.2 dB
Conducted emission 150KHz-30MHz	±2.7 dB
Radiated emission 9KHz-30MHz	± 4.7 dB
Radiated emission 30MHz-1GHz	± 4.6 dB
Radiated emission 1GHz-18GHz	± 4.4 dB
Radiated emission 18GHz-26GHz	± 4.6 dB
Radiated emission 26GHz-40GHz	± 4.6 dB

3 Radiated emission

Test result: Pass

3.1 Limit

Fundamental Frequency (MHz)	Fundamental limit (dBuV/m)	Harmonic limit (dBuV/m)
<input type="checkbox"/> 902 - 928	94	54
<input checked="" type="checkbox"/> 2400 - 2483.5	94	54
<input type="checkbox"/> 5725 - 5875	94	54
<input type="checkbox"/> 24000 - 24250	108	68

The radiated emissions which fall in the restricted bands, must also comply with the radiated emission limits:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

3.2 Measurement Procedure

For Radiated emission below 30MHz:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- Both X and Y axes of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

TEST REPORT**For Radiated emission above 30MHz:**

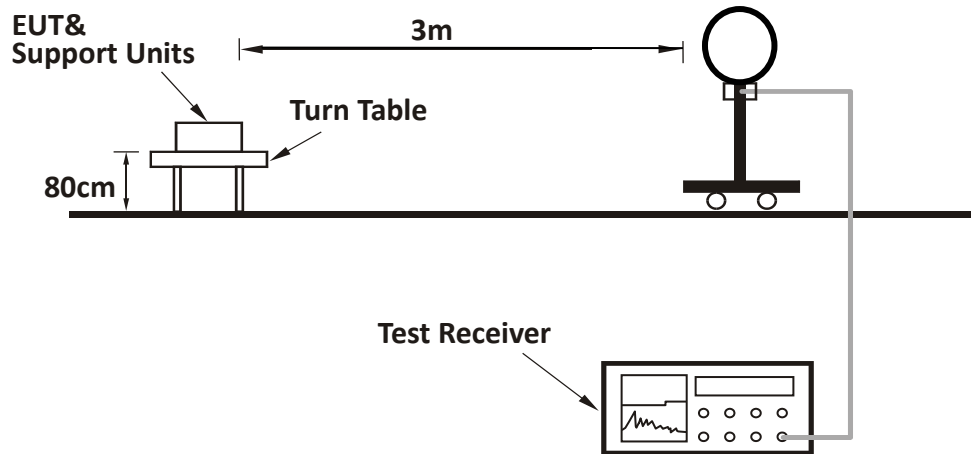
- a) The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c) The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e) The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f) The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

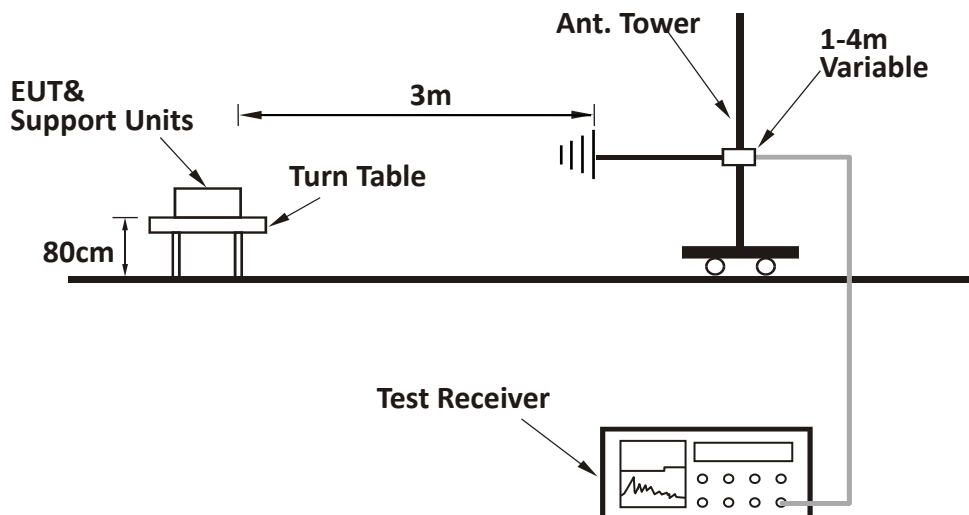
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or $3 \times \text{RBW}$ (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported

3.3 Test Configuration

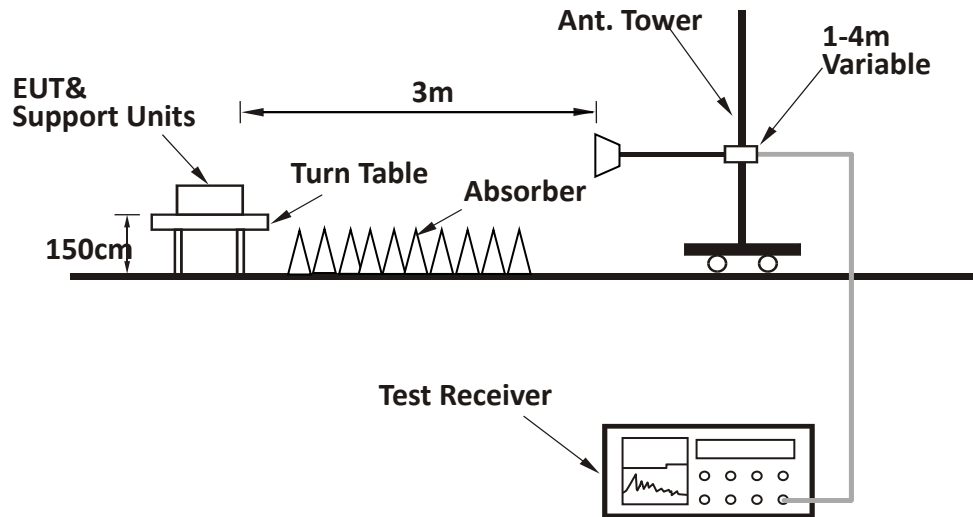
For Radiated emission below 30MHz:



For Radiated emission 30MHz to 1GHz:



For Radiated emission above 1GHz:



TEST REPORT

3.4 Test Results of Radiated Emissions

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Test data below 1GHz:

HJC25:

CH LOW

Antenna	Frequency (MHz)	Corrected Reading (dBUV/m)	Correct Factor (dB/m)	Limit (dBUV/m)	Margin (dB)	Detector
H	53.756	22.20	-15.08	40.00	17.80	PK
H	127.586	18.30	-13.19	43.50	25.20	PK
H	159.759	26.08	-10.97	43.50	17.42	PK
H	193.137	23.34	-10.97	43.50	20.16	PK
H	320.331	24.21	-6.20	46.00	21.79	PK
H	972.283	29.84	4.40	54.00	24.16	PK
V	32.870	20.15	-7.43	40.00	19.85	PK
V	53.756	20.43	-15.14	40.00	19.57	PK
V	63.631	16.72	-14.91	40.00	23.28	PK
V	128.486	15.51	-13.18	43.50	27.99	PK
V	338.855	21.76	-5.64	46.00	24.24	PK
V	887.398	29.49	2.81	46.00	16.51	PK

TEST REPORT

HJC25:

CH MID

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	54.135	23.56	-15.11	40.00	16.44	PK
H	127.586	17.58	-13.19	43.50	25.92	PK
H	159.759	24.04	-10.97	43.50	19.46	PK
H	193.137	23.22	-10.97	43.50	20.28	PK
H	320.331	23.52	-6.20	46.00	22.48	PK
H	958.714	29.16	4.70	46.00	16.84	PK
V	54.135	19.24	-15.14	40.00	20.76	PK
V	64.080	17.79	-14.90	40.00	22.21	PK
V	114.018	14.78	-13.12	43.50	28.72	PK
V	193.137	17.46	-10.97	43.50	26.04	PK
V	442.572	24.14	-3.60	46.00	21.86	PK
V	919.132	28.67	3.36	46.00	17.33	PK

TEST REPORT

HJC25:

CH HIGH

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	53.756	21.62	-15.08	40.00	18.38	PK
H	127.586	17.56	-13.19	43.50	25.94	PK
H	159.759	23.40	-10.97	43.50	20.10	PK
H	193.137	23.25	-10.97	43.50	20.25	PK
H	439.473	22.64	-3.67	46.00	23.36	PK
H	945.334	29.27	4.71	46.00	16.73	PK
V	34.045	19.14	-8.16	40.00	20.86	PK
V	56.071	17.32	-15.11	40.00	22.68	PK
V	193.137	18.82	-10.97	43.50	24.68	PK
V	421.329	23.08	-3.32	46.00	22.92	PK
V	542.610	25.31	-1.48	46.00	20.69	PK
V	952.000	29.34	3.38	46.00	16.66	PK

TEST REPORT

HJC26:

CH LOW

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	54.135	22.66	-15.11	40.00	17.34	PK
H	64.080	32.54	-15.19	40.00	7.46	PK
H	159.759	30.68	-10.97	43.50	12.82	PK
H	193.137	30.97	-10.97	43.50	12.53	PK
H	320.331	29.02	-6.20	46.00	16.98	PK
H	958.714	31.24	4.70	46.00	14.76	PK
V	31.292	20.25	-6.44	40.00	19.75	PK
V	64.080	25.30	-14.90	40.00	14.70	PK
V	127.586	17.98	-13.19	43.50	25.52	PK
V	193.137	24.69	-10.97	43.50	18.81	PK
V	562.014	25.38	-1.07	46.00	20.62	PK
V	932.141	28.33	3.41	46.00	17.67	PK

TEST REPORT

HJC26:

CH MID

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	54.135	22.94	-15.11	40.00	17.06	PK
H	64.080	25.74	-15.19	40.00	14.26	PK
H	159.759	30.59	-10.97	43.50	12.91	PK
H	193.137	31.01	-10.97	43.50	12.49	PK
H	320.331	28.72	-6.20	46.00	17.28	PK
H	958.714	30.01	4.70	46.00	15.99	PK
V	47.703	17.56	-14.44	40.00	22.44	PK
V	64.080	25.56	-14.90	40.00	14.44	PK
V	127.586	18.90	-13.19	43.50	24.60	PK
V	159.759	20.63	-11.65	43.50	22.87	PK
V	193.137	23.83	-10.97	43.50	19.67	PK
V	919.132	28.88	3.36	46.00	17.12	PK

TEST REPORT

HJC26:

CH HIGH

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	53.756	22.95	-15.08	40.00	17.05	PK
H	64.080	23.88	-15.19	40.00	16.12	PK
H	159.759	30.32	-10.97	43.50	13.18	PK
H	193.137	30.96	-10.97	43.50	12.54	PK
H	320.331	27.47	-6.20	46.00	18.53	PK
H	952.000	29.29	4.83	46.00	16.71	PK
V	64.080	21.97	-14.90	40.00	18.03	PK
V	127.586	18.82	-13.19	43.50	24.68	PK
V	193.137	23.94	-10.97	43.50	19.56	PK
V	430.305	22.65	-3.29	46.00	23.35	PK
V	602.929	25.79	-1.50	46.00	20.21	PK
V	925.613	28.91	3.42	46.00	17.09	PK

TEST REPORT

HJC27:

CH LOW

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	54.135	22.73	-15.11	40.00	17.27	PK
H	127.586	22.87	-13.19	43.50	20.63	PK
H	193.137	32.34	-10.97	43.50	11.16	PK
H	223.848	24.79	-9.57	46.00	21.21	PK
H	384.545	24.90	-4.58	46.00	21.10	PK
H	821.387	28.45	2.25	46.00	17.55	PK
V	35.511	20.73	-9.09	40.00	19.27	PK
V	54.135	18.30	-15.14	40.00	21.70	PK
V	193.137	19.59	-10.97	43.50	23.91	PK
V	421.329	23.28	-3.32	46.00	22.72	PK
V	607.181	25.98	-1.44	46.00	20.02	PK
V	952.000	29.00	3.38	46.00	17.00	PK

TEST REPORT

HJC27:

CH MID

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	54.135	22.20	-15.11	40.00	17.80	PK
H	127.586	22.92	-13.19	43.50	20.58	PK
H	223.848	24.96	-9.57	46.00	21.04	PK
H	288.284	23.65	-7.06	46.00	22.35	PK
H	384.545	23.51	-4.58	46.00	22.49	PK
H	804.252	28.92	2.33	46.00	17.08	PK
V	35.762	17.43	-9.24	40.00	22.57	PK
V	53.006	16.55	-15.15	40.00	23.45	PK
V	114.018	15.55	-13.12	43.50	27.95	PK
V	427.292	22.63	-3.22	46.00	23.37	PK
V	684.226	25.99	-0.34	46.00	20.01	PK
V	906.304	28.65	3.24	46.00	17.35	PK

TEST REPORT

HJC27:

CH HIGH

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	52.634	22.74	-15.00	40.00	17.26	PK
H	127.586	23.11	-13.19	43.50	20.39	PK
H	193.137	25.34	-10.97	43.50	18.16	PK
H	223.848	22.76	-9.57	46.00	23.24	PK
H	320.331	22.88	-6.20	46.00	23.12	PK
H	925.613	29.38	4.04	46.00	16.62	PK
V	31.292	20.07	-6.44	40.00	19.93	PK
V	53.379	17.98	-15.15	40.00	22.02	PK
V	114.018	14.60	-13.12	43.50	28.90	PK
V	193.137	18.52	-10.97	43.50	24.98	PK
V	565.978	26.24	-0.98	46.00	19.76	PK
V	945.334	28.81	3.38	46.00	17.19	PK

TEST REPORT

HJH37 Ble:

CH LOW

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	47.703	23.20	-13.90	40.00	16.80	PK
H	55.288	22.29	-15.19	40.00	17.71	PK
H	104.798	17.68	-12.96	43.50	25.82	PK
H	250.486	20.34	-8.04	46.00	25.66	PK
H	355.940	21.49	-5.06	46.00	24.51	PK
H	698.804	28.06	1.59	46.00	17.94	PK
V	32.184	19.88	-6.99	40.00	20.12	PK
V	53.756	18.73	-15.14	40.00	21.27	PK
V	178.770	15.98	-10.99	43.50	27.52	PK
V	360.977	21.38	-5.13	46.00	24.62	PK
V	703.731	26.66	0.48	46.00	19.34	PK
V	932.141	29.53	3.41	46.00	16.47	PK

TEST REPORT

HJH37 Ble:

CH MID

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	47.703	22.67	-13.90	40.00	17.33	PK
H	54.135	21.91	-15.11	40.00	18.09	PK
H	102.612	17.93	-12.93	43.50	25.57	PK
H	353.447	20.77	-5.03	46.00	25.23	PK
H	684.226	27.85	1.26	46.00	18.15	PK
H	979.139	29.87	4.35	54.00	24.13	PK
V	54.135	18.23	-15.14	40.00	21.77	PK
V	157.529	16.65	-11.72	43.50	26.85	PK
V	274.446	19.13	-7.43	46.00	26.87	PK
V	424.300	23.42	-3.18	46.00	22.58	PK
V	582.112	25.31	-0.99	46.00	20.69	PK
V	965.474	28.85	3.41	54.00	25.15	PK

TEST REPORT

HJH37 Ble:

CH HIGH

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	35.016	19.24	-8.42	40.00	20.76	PK
H	47.703	23.24	-13.90	40.00	16.76	PK
H	73.233	18.40	-14.56	40.00	21.60	PK
H	101.893	17.86	-12.92	43.50	25.64	PK
H	590.351	27.10	-0.88	46.00	18.90	PK
H	972.283	30.22	4.40	54.00	23.78	PK
V	31.073	19.82	-6.30	40.00	20.18	PK
V	55.678	19.71	-15.11	40.00	20.29	PK
V	107.031	14.61	-12.99	43.50	28.89	PK
V	358.450	20.27	-5.09	46.00	25.73	PK
V	586.217	25.80	-1.11	46.00	20.20	PK
V	965.474	29.02	3.41	54.00	24.98	PK

TEST REPORT

HJH103 Ble:

CH LOW

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	47.703	22.51	-13.90	40.00	17.49	PK
H	70.210	20.69	-14.66	40.00	19.31	PK
H	103.335	16.94	-12.95	43.50	26.56	PK
H	230.230	25.18	-9.19	46.00	20.82	PK
H	418.378	22.95	-3.67	46.00	23.05	PK
H	919.132	30.34	3.89	46.00	15.66	PK
V	53.756	19.25	-15.14	40.00	20.75	PK
V	91.700	15.49	-13.57	43.50	28.01	PK
V	186.468	16.76	-11.04	43.50	26.74	PK
V	455.189	24.15	-3.59	46.00	21.85	PK
V	573.988	26.65	-0.80	46.00	19.35	PK
V	965.474	28.96	3.41	54.00	25.04	PK

TEST REPORT

HJH103 Ble:

CH MID

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	53.756	22.51	-15.08	40.00	17.49	PK
H	70.210	20.44	-14.66	40.00	19.56	PK
H	103.335	16.95	-12.95	43.50	26.55	PK
H	227.016	24.87	-9.39	46.00	21.13	PK
H	602.929	26.70	-0.27	46.00	19.30	PK
H	932.141	29.36	4.27	46.00	16.64	PK
V	30.639	21.08	-6.03	40.00	18.92	PK
V	53.756	18.19	-15.14	40.00	21.81	PK
V	70.705	15.28	-14.65	40.00	24.72	PK
V	193.137	17.83	-10.97	43.50	25.67	PK
V	703.731	27.67	0.48	46.00	18.33	PK
V	893.656	28.28	2.98	46.00	17.72	PK

TEST REPORT

HJH103 Ble:

CH HIGH

Antenna	Frequency (MHz)	Corrected Reading (dBuV/m)	Correct Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Detector
H	54.135	22.58	-15.11	40.00	17.42	PK
H	70.210	20.33	-14.66	40.00	19.67	PK
H	159.759	17.96	-10.97	43.50	25.54	PK
H	230.230	25.72	-9.19	46.00	20.28	PK
H	754.963	28.79	1.33	46.00	17.21	PK
H	938.714	30.60	4.49	46.00	15.40	PK
V	31.292	19.62	-6.44	40.00	20.38	PK
V	54.135	16.93	-15.14	40.00	23.07	PK
V	102.612	15.17	-12.93	43.50	28.33	PK
V	207.197	17.29	-10.31	43.50	26.21	PK
V	418.378	22.10	-3.44	46.00	23.90	PK
V	912.695	27.86	3.28	46.00	18.14	PK

TEST REPORT

Test result above 1GHz:

HJC25:

CH	Antenna	Frequency (MHz)	Corrected Reading (dB μ V/m)	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)	Detector
L	H	2402	73.06	-9.19	114.00	40.94	PK
	V	2402	71.96	-9.61	114.00	42.04	PK
	H	2400	50.74	-9.19	74.00	23.26	PK
	V	2400	50.50	-9.61	74.00	23.50	PK
	H	4804	54.91	9.13	74.00	19.09	PK
	V	4804	55.57	9.23	74.00	18.43	PK
	H	9608	57.22	9.07	74.00	16.78	PK
	V	9608	59.15	9.53	74.00	14.85	PK
M	H	2440	74.54	-9.09	114.00	39.46	PK
	V	2440	72.97	-9.51	114.00	41.03	PK
	H	4880	50.83	9.13	74.00	23.17	PK
	V	4880	51.02	9.31	74.00	22.98	PK
	H	9760	50.22	9.25	74.00	23.78	PK
	V	9760	50.53	9.65	74.00	23.47	PK
H	H	2480	74.96	-9.00	114.00	39.04	PK
	V	2480	72.30	-9.40	114.00	41.70	PK
	H	2483.5	40.57	-8.98	74.00	33.43	PK
	V	2483.5	42.48	-9.39	74.00	31.52	PK
	H	4960	53.60	9.12	74.00	20.40	PK
	V	4960	50.63	9.38	74.00	23.37	PK
	H	9920	54.28	9.45	74.00	19.72	PK
	V	9920	51.12	9.79	74.00	22.88	PK

TEST REPORT

HJC26:

CH	Antenna	Frequency (MHz)	Corrected Reading (dBµV/m)	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)	Detector
L	H	2402	74.05	-9.19	114.00	39.95	PK
	V	2402	72.04	-9.61	114.00	41.96	PK
	H	2400	50.33	-9.19	74.00	23.67	PK
	V	2400	50.09	-9.61	74.00	23.91	PK
	H	4804	55.15	9.13	74.00	18.85	PK
	V	4804	55.34	9.23	74.00	18.66	PK
	H	9608	54.80	9.07	74.00	19.20	PK
	V	9608	56.15	9.53	74.00	17.85	PK
M	H	2440	74.02	-9.09	114.00	39.98	PK
	V	2440	71.92	-9.51	114.00	42.08	PK
	H	4880	51.21	9.13	74.00	22.79	PK
	V	4880	49.64	9.31	74.00	24.36	PK
	H	9760	49.65	9.25	74.00	24.35	PK
	V	9760	52.28	9.65	74.00	21.72	PK
H	H	2480	73.66	-9.00	114.00	40.34	PK
	V	2480	72.18	-9.40	114.00	41.82	PK
	H	2483.5	42.76	-8.98	74.00	31.24	PK
	V	2483.5	44.80	-9.39	74.00	29.20	PK
	H	4960	52.04	9.12	74.00	21.96	PK
	V	4960	53.51	9.38	74.00	20.49	PK
	H	9920	50.46	9.45	74.00	23.54	PK
	V	9920	51.94	9.79	74.00	22.06	PK

TEST REPORT

HJC27:

CH	Antenna	Frequency (MHz)	Corrected Reading (dBμV/m)	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)	Detector
L	H	2402	72.45	-9.19	114.00	41.55	PK
	V	2402	73.43	-9.61	114.00	40.57	PK
	H	2400	50.32	-9.19	74.00	23.68	PK
	V	2400	50.01	-9.61	74.00	23.99	PK
	H	4804	59.42	9.13	74.00	14.58	PK
	V	4804	47.67	0.43	74.00	26.33	PK
	H	9608	52.90	9.07	74.00	21.10	PK
	V	9608	45.36	2.73	74.00	28.64	PK
M	H	2440	72.27	-9.09	114.00	41.73	PK
	V	2440	72.60	-9.51	114.00	41.40	PK
	H	4880	48.67	0.33	74.00	25.33	PK
	V	4880	45.59	0.51	74.00	28.41	PK
	H	9760	46.28	2.45	74.00	27.72	PK
	V	9760	46.62	2.85	74.00	27.38	PK
H	H	2480	73.93	-9.00	114.00	40.07	PK
	V	2480	72.79	-9.40	114.00	41.21	PK
	H	2483.5	41.80	-8.98	74.00	32.20	PK
	V	2483.5	42.43	-9.39	74.00	31.57	PK
	H	4960	45.28	0.32	74.00	28.72	PK
	V	4960	49.65	0.58	74.00	24.35	PK
	H	9920	47.45	2.65	74.00	26.55	PK
	V	9920	50.24	2.99	74.00	23.76	PK

TEST REPORT

HJH37 Ble:

CH	Antenna	Frequency (MHz)	Corrected Reading (dBμV/m)	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)	Detector
L	H	2402	75.19	-9.19	114.00	38.81	PK
	V	2402	74.09	-9.61	114.00	39.91	PK
	H	2400	52.54	-9.19	74.00	21.46	PK
	V	2400	51.21	-9.61	74.00	22.79	PK
	H	4804	47.15	-3.32	74.00	26.85	PK
	V	4804	47.40	-3.22	74.00	26.60	PK
	H	7206	45.65	0.84	74.00	28.35	PK
	V	7206	45.96	0.94	74.00	28.04	PK
M	H	2440	73.47	-9.09	114.00	40.53	PK
	V	2440	74.06	-9.51	114.00	39.94	PK
	H	4880	44.11	-3.24	74.00	29.89	PK
	V	4880	50.00	-3.06	74.00	24.00	PK
	H	7320	49.74	0.98	74.00	24.26	PK
	V	7320	48.00	1.08	74.00	26.00	PK
H	H	2480	73.02	-9.00	114.00	40.98	PK
	V	2480	75.89	-9.40	114.00	38.11	PK
	H	2483.5	41.86	-8.98	74.00	32.14	PK
	V	2483.5	45.41	-9.39	74.00	28.59	PK
	H	4960	40.98	-3.17	74.00	33.02	PK
	V	4960	43.68	-2.91	74.00	30.32	PK
	H	7440	43.01	1.13	74.00	30.99	PK
	V	7440	43.90	1.23	74.00	30.10	PK

TEST REPORT

HJH103 Ble:

CH	Antenna	Frequency (MHz)	Corrected Reading (dBμV/m)	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)	Detector
L	H	2402	73.05	-9.19	114.00	40.95	PK
	V	2402	74.29	-9.61	114.00	39.71	PK
	H	2400	49.32	-9.19	74.00	24.68	PK
	V	2400	49.01	-9.61	74.00	24.99	PK
	H	4804	59.16	9.13	74.00	14.84	PK
	V	4804	59.26	9.23	74.00	14.74	PK
	H	9608	55.41	9.07	74.00	18.59	PK
	V	9608	55.87	9.53	74.00	18.13	PK
M	H	2440	72.93	-9.09	114.00	41.07	PK
	V	2440	74.51	-9.51	114.00	39.49	PK
	H	4880	58.12	9.13	74.00	15.88	PK
	V	4880	56.89	9.31	74.00	17.11	PK
	H	9760	55.68	9.25	74.00	18.32	PK
	V	9760	58.00	9.65	74.00	16.00	PK
H	H	2480	73.79	-9.00	114.00	40.21	PK
	V	2480	75.37	-9.40	114.00	38.63	PK
	H	2483.5	42.81	-8.98	74.00	31.19	PK
	V	2483.5	46.02	-9.39	74.00	27.98	PK
	H	4960	54.69	9.12	74.00	19.31	PK
	V	4960	54.33	9.38	74.00	19.67	PK
	H	9920	53.48	9.45	74.00	20.52	PK
	V	9920	55.67	9.79	74.00	18.33	PK

- Remark: 1. Correct Factor = Antenna Factor + Cable Loss (+ Amplifier, for higher than 1GHz), the value was added to Original Receiver Reading by the software automatically.
 2. Corrected Reading = Original Receiver Reading + Correct Factor
 3. Margin = Limit - Corrected Reading
 4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

Example: Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
 Gain of Preamplifier = 32.00dB, Original Receiver Reading = 10.00dBuV,
 Limit = 40.00dBuV/m.
 Then Correct Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;
 Corrected Reading = 10dBuV + 0.20dB/m = 10.20dBuV/m;
 Margin = 40.00dBuV/m - 10.20dBuV/m = 29.80dB.

4 Power line conducted emission

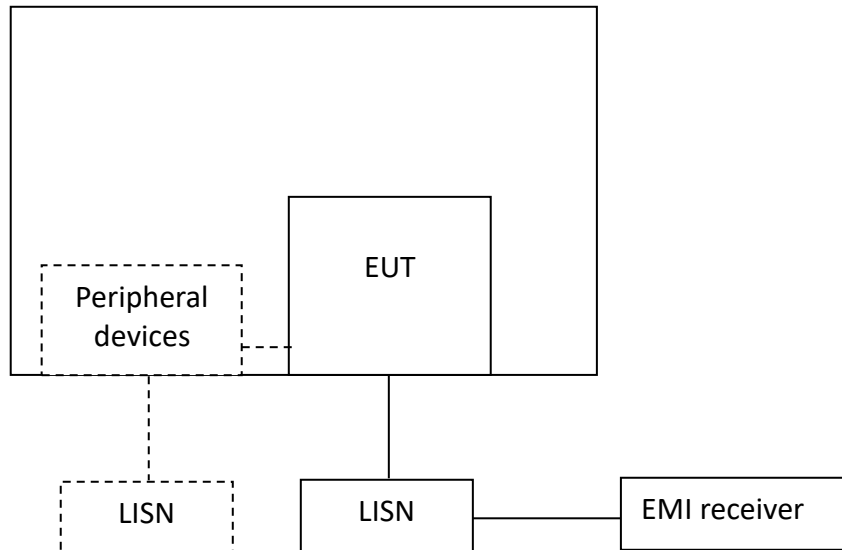
Test result: Pass

4.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
0.15-0.5	66 to 56*	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

4.2 Test Configuration



TEST REPORT**4.3 Measurement Procedure**

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50 Ω LISN port (to which the EUT is connected), where permitted, terminated into a 50 Ω measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50 Ω measuring port is terminated by a measuring instrument having 50 Ω input impedance. All other ports are terminated in 50 Ω loads.

Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

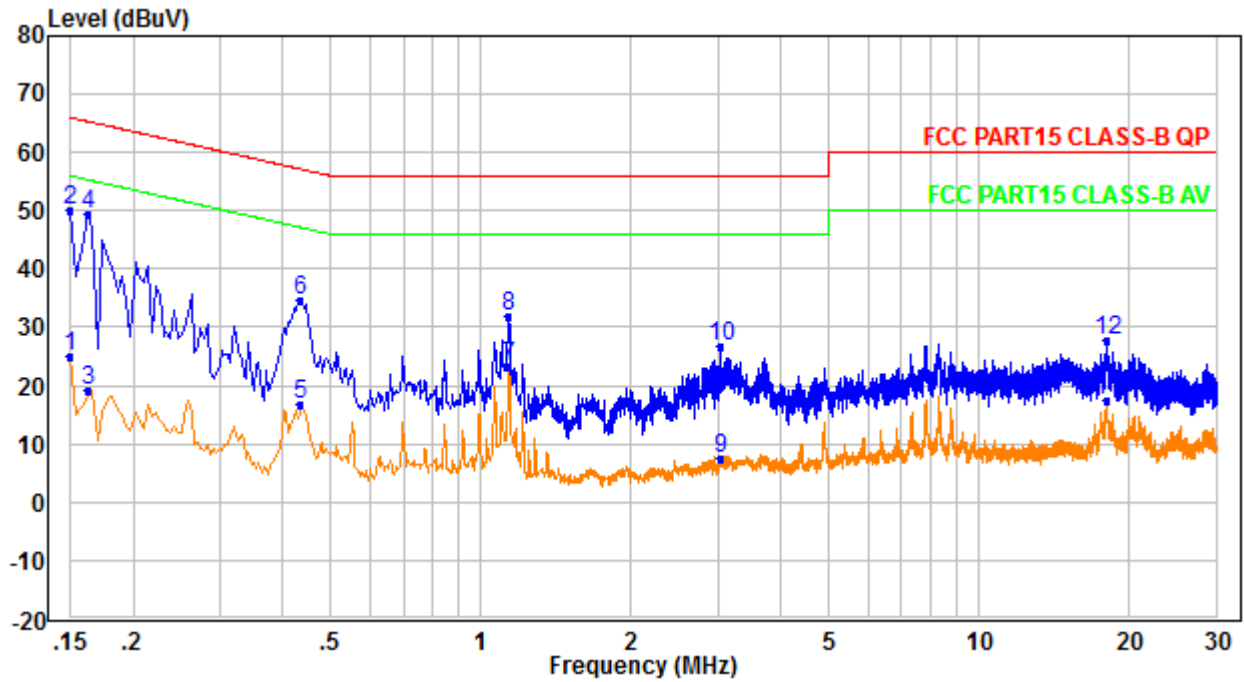
TEST REPORT

4.4 Test Results of Power line conducted emission

HJC25 and HJC26 and HJC27 were tested and the worst data of HJC26 was listed in the report:

Test Curve:

L Line



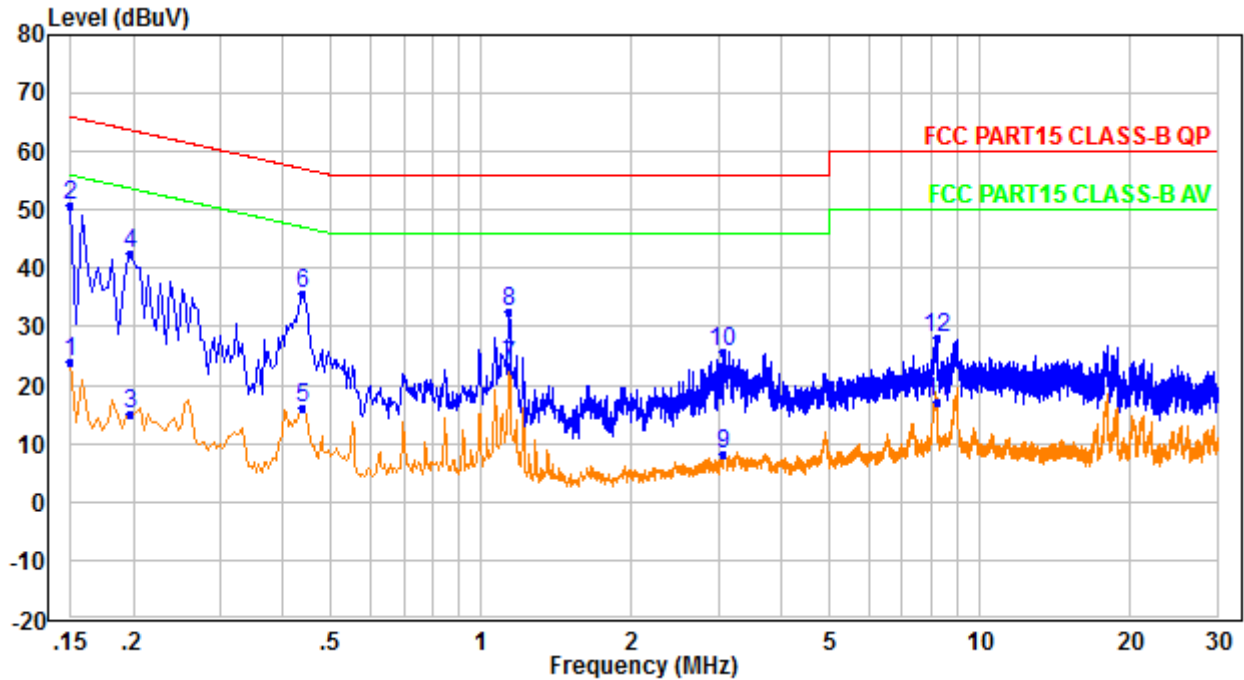
Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.15	49.96	66.00	16.04	24.89	56.00	31.11
0.16	49.50	65.36	15.86	19.29	55.36	36.07
0.43	34.70	57.18	22.48	16.75	47.18	30.43
1.14	31.95	56.00	24.05	23.45	46.00	22.55
3.04	26.82	56.00	29.18	7.44	46.00	38.56
18.11	27.80	60.00	32.20	17.46	50.00	32.54

TEST REPORT

Test Curve:

N Line



Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.15	50.86	66.00	15.14	23.94	56.00	32.06
0.20	42.46	63.69	21.23	14.92	53.69	38.77
0.44	35.51	57.10	21.59	16.12	47.10	30.98
1.14	32.68	56.00	23.32	23.39	46.00	22.61
3.05	25.80	56.00	30.20	8.12	46.00	37.88
8.21	28.08	60.00	31.92	17.28	50.00	32.72

Remark: 1. Correct Factor = LISN Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.

2. Corrected Reading = Original Receiver Reading + Correct Factor

3. Margin = Limit - Corrected Reading

4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

***** END *****